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BESTSDI

BESTSDI – Western Balkans Academic Education
Evolution and Professional's Sustainable Training for
Spatial Data Infrastructures

*With the support of the Erasmus+ program:
Higher Education – International Capacity Building
N° 574150-EPP-1-2016-1-HR-EPPKA2-CBHE-JP*

BESTSDI Project Sustainability Plan

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Description of the project (Annex I to the Grant Agreement)

Short Description:

The Deliverable specifies describes the plans that the project has put in place to ensure sustainability of BESTSDI project, its outcomes and cooperation established among the project partners.

Keywords:

Sustainability, BESTSDI project, Outcomes, Cooperation



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Table of contents

1	INTRODUCTION	4
1.1	BESTSDI PROJECT CONTEXT	5
1.2	SUSTAINABILITY CONCEPT AND PLATFORM FOR PLAN DEVELOPMENT.....	6
2	REALIZATION OF THE BESTSDI PROJECT SUSTAINABILITY.....	9
2.1	IMPLEMENTATION AND DEVELOPMENT OF SDI CURRICULUM	9
2.2	DEVELOPMENT OF NEW JOINT PROJECT OPPORTUNITIES AND ACTIVITIES	9
2.3	DEVELOPMENT AND IMPLEMENTATION OF NEW RESEARCH AND TRAINING ACTIVITIES	9
2.4	MAINTAINING PARTNER COMMUNICATION AND EXPANDING SDI CURRICULUM USAGE.....	10
2.5	DEVELOPMENT OF STAKEHOLDER NETWORKS AND INVOLVEMENT IN SDI ARENAS	10
3	PARTNER ROLES IN EXECUTION OF SUSTAINABILITY PLAN.....	11



1 Introduction

A Spatial Data Infrastructure (SDI) is a framework to share, discover and re-use spatial data among public authorities, the private sector and citizens. SDI's are based on a "coordinated series of agreements on technology standards, institutional agreements, and policies" (Kuhn 2005) that unlock geospatial information resources for a wide range of application fields, for instance environmental monitoring and policy making, transportation planning, health care, physical planning, national security, etc. They are an integral part of the e-government movement and open data initiatives.

INSPIRE is an EU Directive (2007/2/EC) aiming to establish an infrastructure for spatial information in Europe to support Community environmental policies and policies or activities which may have an impact on the environment (<http://inspire.ec.europa.eu/>). The Directive addresses problems regarding the availability, quality, organisation, accessibility and sharing of spatial information. INSPIRE may be seen as the legal framework of a European SDI.

BESTSDI is based on findings of the EU IPA2010 project "INSPIRATION – Spatial Data Infrastructure in the Western Balkans" executed in 2012-2013 and the follow-on project "Cooperation in the Western Balkans region – Infrastructure for Spatial Information in the region of Western Balkan" (IMPULS), financed by SIDA (Swedish International Development Cooperation Agency), being under execution.

While INSPIRATION focused on promotion of SDI and coordination of its further development resulting in strong legislative activities among the involved National Mapping and Cadastral Agencies (NMCA's), IMPULS is a project aiming to provide support to the development of the Regional SDI's in accordance with the INSPIRE Directive and SEE 2020 (South East Europe 2020 Strategy), as well as the improvement of interoperable spatial information and services in the Western Balkan region for efficient support to e-Government. The IMPULS project primarily addresses the internal needs of the NMCA's in the partner countries and recognises a severe shortage of qualified staff able to develop spatial data infrastructures, both with respect to data and service provision as well as its usage.

BESTSDI refines and extends the IMPULS approach in three ways:

- 1) A successful SDI requires an active participation by in principle all national and local governments within a country as well as its private sector and – directly or indirectly – its citizens. Promoting and implementing necessity for development of SDI curricula and courses BESTSDI goes beyond the NMCA-centric approach and addresses a wide group of SDI stakeholders, which are representative for the heterogeneous community of spatial data providers and consumers.
- 2) An SDI comes to life, if published geospatial data is widely being (re-) used, in particular, for purposes other than those it was created for. BESTSDI covers both, spatial data provisions as well as its (re-) usage in application domains of regional interest.
- 3) All BESTSDI partner countries are either candidate or potential candidate countries of joining the European Union. Thus, the implementation of the INSPIRE Directive as well as compliance with a wide-ranging set domain-specific EU regulation which require geospatial capabilities – e.g. EU Common Agriculture Policy (CAP), EU Water Framework Directive (WFD) or Environmental and Noise Directive (END) – is of strategic importance for becoming a full member of the EU.

By following such a demand-driven approach and by considering the complexity and heterogeneity of a multi-purpose SDI, BESTSDI takes SDI-related education in the partner countries a significant step further,



supports a sustainable SDI evolution and contributes to the development of university-enterprise cooperation, entrepreneurship and employability of graduates.

Project consortium consists out of:

- The University of Zagreb, Faculty of Geodesy (UNIZG FOG) as the coordinating partner.
- Program countries partner experts are from Catholic University Leuven, Belgium (KU LEUVEN) the University of Applied Sciences Bochum, Germany (HBO), the University in Split, Croatia (UNIST) and the University of Ss. Cyril and Methodius Skopje, Macedonia (UKIM).
- Partner countries partners from Albania, Bosnia and Herzegovina, Kosovo, Montenegro and Serbia are leading universities and faculties in those countries: Polytechnic University of Tirana (PUT) and Agricultural University of Tirana (AUT) both from Albania, University of Banja Luka (UNIBL), University of Mostar (UNIMO), University of Sarajevo (UNSA) and university of Tuzla (UNITZ) all from Bosnia and Herzegovina, University for Business and Technology, Pristina (UBT) and University of Prizren (UNIPZ) both from Kosovo, University of Montenegro (UCG) from Montenegro and University of Belgrade (UNIBG) and University of Novi Sad (UNS) from Serbia.

Additionally, three NMCA's participate in project as associated partners being especially important, since they should contribute in evaluation of developed curricula. All together project consortium consists of 16 partner universities and 3 associated partners.

1.1 BESTSDI project context

BESTSDI is an Erasmus+ Capacity Building in field of Higher Education gathering 16 partners from 3 EU and 5 partner countries from Region 1 Western Balkans. The project is also supported by a group of Associated Partners consisting of national mapping and cadastre authorities from the region (Bosnia and Herzegovina and North Macedonia) and EU (Sweden and Norway) active in the field of SDI in the region. The project started on October 15th, 2016, upon approval by the EU Education, Audiovisual and Culture Executive Agency (EACEA) and runs over three years.

EO4GEO aims to help bridging the skills gap in the space/geospatial sector by creating a strong alliance of players from the sector/community reinforcing the existing ecosystem and fostering the uptake and integration of space/geospatial data and services. EO4GEO will work in a multi- and interdisciplinary way and apply innovative solutions for its education and training actions including: case based and collaborative learning scenarios; learning-while-doing in a living lab environment; on-the-job training; the co-creation of knowledge, skills and competencies; etc.

The activities related to modernization and introduction of new curricula in university study program are long-lasting and therefore is extremely important to ensure sustainability of implementation and further development of project activities, especially related towards fulfilment of implementation of project results and continuation of established cooperation among the project consortia members and other involved stakeholders.



1.2 Sustainability concept and platform for plan development

Sustainability concept

A project is sustainable when it continues to deliver benefits to the project beneficiaries and/or other constituencies for an extended period after the Commission's financial assistance has been terminated (from: *Sustainability of international cooperation projects in the field of higher education and vocational training: Handbook on Sustainability*. Luxembourg: European Commission Directorate-General Education and Culture, 2006).

A practical way to describe the potential or achieved sustainability of a project is to use the following two criteria:

1. Diversity and intensity of activities/outputs maintained or developed after the end of the BESTSDI project (funding):
 - Activities/outputs are maintained, i.e. new accreditation procedures (activities) / a curriculum is still used and further developed (outputs)
 - Activities/outputs are further developed, i.e. new projects are launched (activities) / a partner cooperation is expanding in new areas (outputs)
 - Activities/outputs are developed, i.e. needs are assessed annually (activities) / a research and training activities continue and expand (outputs)
 - Activities/outputs can be disseminated, i.e. maintenance of a web site presenting project related (activities) / Curriculum developed is included in existing courses in universities which do not belong to the initial consortium (outputs)
2. Intensity and enlargement of the cooperation:
 - The international network is maintained, i.e. partners take care of the follow-up.
 - The local network is maintained, i.e. the universities meet regularly with other SDI stakeholders.
 - Finally, the initial network can be enlarged to incorporate other domains or entities, i.e. new universities or SDI stakeholders join the constituencies.

Several sustainability factors could be defined; these can be classified in two categories:

1. Project-level factors, that is, elements of the project on which you have a direct influence (i.e. the quality of the project's design). These include:
 - a. Quality of project's design in meeting academic, professional and/or social needs
 - b. Involvement of consortium members: sense of ownership and motivation
 - c. Effective management and leadership
 - d. Active participation of the audience (direct target groups)
 - e. Capacity for securing adequate resources for continuation
2. Context-level factors, that is, elements external to the project itself but that you may influence somehow (i.e. the national support). These covers:
 - a. Academic and/or Institutional support
 - b. National support
 - c. Socio-economic support



Platform for plan development

In the Project description general idea and directions are given for achieving project sustainability beyond its lifetime as follows:

The project results that are considered to be sustainable are the a) project curricula, b) localised curricula and courses at partner universities, c) life-long learning courses for professionals and d) the consortium agreement including the financing model. Direct sustainability of BESTSDI project results (curricula/courses) will be ensured during project lifetime through their formal accreditation/adoption and implementation in the teaching process. Furthermore, beyond projects lifetime, partners having time constraints in the introduction of new curriculum's will be supported for accreditation at the proper moment. Produced teaching material must have a permanent value.

The strategies for achieving sustainability are closely linked to the exploitation strategies outlined in section G2. Of special importance are the financing models, also elaborated in the consortium agreement. In this context, business options will be discussed, but it is not realistic to create a consortium wide business plan and business model. The BESTSDI will anyway support the development of business plans at the institutional level.

For mainstreaming and creating multiplier effects, the following strategies will be applied. First, all learning material created by the project and not associated with conflicting intellectual property rights, will be made available through open licenses (CC-BY-AY). The use of a project curriculum, to be adapted and localised by each country, is a way of mainstreaming. This project curriculum will also be used by the EU partner universities and upgraded as they upgrade their own curricula. Finally, multiplier effects will also be created when extending the SDI usage groups to other academic disciplines. Due to the priorities of the Erasmus plus program, only usage disciplines which are recognised as regional or multi-national priorities are considered within the BESTSDI.

However, the need of introducing SDI usage also to other academic disciplines is clearly expressed by professional organisations. Having the learning material as open resources as well as best practices for creating "SDI-usage" courses will contribute to creating substantial multiplier effects.

Further in the consortium agreement named "Memorandum of Understanding" following provisions are defined and accepted by the partners which have direct impact on development of sustainability plan:

- **Object of cooperation:** *partners declared the common interest for co-operation in academic education, research and knowledge exchange in the field of cartography, remote sensing, geoinformatics, spatial data infrastructure and other relevant topics such as the outputs of BESTSDI project. It is related particularly to the following areas:*
 - *Products (learning material in particular) generated within the frame of BESTSDI project*
 - *Results derived from BESTSDI project*
 - *Activities carried out after BESTSDI project*
 - *Future communication and cooperation related to BESTSDI project outputs*
- **Form of cooperation:** *Full exchange of information regarding implementation of developed courses and course materials as well as in their amendment and upgrading, also providing to all other partners academic data concerning their respective study program or courses developed and/or established based on the BESTSDI project.*
Conducting annual meeting of the partners for the purpose of fostering cooperation among the



parties developed within the frame of BESTSDI project. At the annual meetings, the partners will inform each other about the following topics:

- *Updating learning materials*
- *Executed courses related to SDI and their amendments*
- *Development of study programs*
- *Joint project opportunity discussions*

Finally, consortia conducted Academia-Business cooperation requirements survey (2019) on regional and Europe-wide level. According to the results of this survey stakeholders find:

- need for SDI courses and SDI competences in the region still remain very high,
- there is still a high lack of qualified personnel (on regional and European level),
- the lack of communication between stakeholder groups in the region is strongly emphasised,
- in general, promotion of relevant activities, including also projects like BESTSDI is weak.

Document scope

The scope of this document is, based on inputs described in Chapter 1, to describe activities, define procedures and tools for execution of described activities what is described in Chapter 2, and to define roles of partners in ensuring the sustainability of the BESTSDI project results, what is defined in Chapter 3.



2 Realization of the BESTSDI project sustainability

In accordance to the inputs from the Chapter 1, Sustainability plan is covering following activities which will be described in sub-chapters 2.1 – 2.5:

- Implementation and development of SDI curriculum,
- Development of new joint project opportunities and activities,
- Development and implementation of new research, education and training activities,
- Maintaining partner communication and expanding SDI curriculum usage,
- Development of stakeholder networks, promotion and involvement in SDI arenas.

2.1 Implementation and development of SDI curriculum

BESTSDI project partners participating in the Erasmus+ Capacity Building in the field of Higher Education project have obliged themselves to continue implementing project results in the five-year period beyond the end of the project. Being aware of this fact the further implementation and development of BESTSDI project SDI curriculum is the most important sustainability activity. It comprises following actions:

- execution of SDI modules/courses/part of the courses which have been tested during the third year of BESTSDI project lifetime,
- further development of BESTSDI project SDI curriculum
- further implementation of BESTSDI project SDI curriculum in courses in the consortia partners study programmes.

2.2 Development of new joint project opportunities and activities

Development of new joint project opportunities and activities is probably major activity which is promoting further consortia partner cooperation and ensures funding of joint partner activities. This activity includes exchange of information about the partner project interest, their intention to participate in project calls and building capacities to execute approved projects. Actions under this activity are:

- exchange of information about the project calls and project interest among the consortia partners,
- joint participation of consortia partners in project calls,
- consortia partners joint execution of projects,
- providing training for building capacities for execution of competitive projects.

This activity has already been implemented through joint participation of consortia partners in Erasmus+ CBHE 2019 call and acceptance of submitted GEOBIZ project for financing in period 2020-2022.

2.3 Development and implementation of new research, education and training activities

This activity covers research, education and training activities among the consortia partners. Both, research and training activities are covering great variety of possibilities and therefore major focus of this activity is on the exchange of the information and continuation of training activities for teacher and professionals (LLL courses). Specific actions under this activity are:

- exchange of information about the research activities among the consortia partners,
- joint execution of research activities/projects,
- exchange of teachers and students in the field of education,



- providing training in SDI and related knowledge areas.

2.4 Maintaining partner communication and expanding SDI curriculum usage

This activity includes maintenance of the BESTSDI project communication tools and platforms, and further promotion of project/consortia results what should result in expansion of project developed SDI curriculum usage at faculties/universities outside the consortia circle. Those specific activities are:

- maintenance of the BESTSDI project web-page www.beststdi.eu - the web-page should be continuously (periodically) updated and inform about the activities of the consortia,
- maintenance of the BESTSDI project Moodle platform – the Moodle platform should remain open to consortia partners for reporting and updating project curriculum,
- maintenance of the BESTSDI project developed SDI curriculum data base – in addition to Moodle platform, curriculum data base should remain active and should be updated by consortia partners with new curriculum content,
- organising annual consortia partner gathering/event for exchange of information, presentation of development and training of teacher,
- supporting BESTSDI project developed SDI curriculum at faculties/universities outside the consortia circle – promoting project SDI curriculum in professional and academic society.

2.5 Development of stakeholder networks, promotion and involvement in SDI arenas

This activity includes maintenance of the stakeholder networks developed in frame of the BESTSDI project and raise of partner countries project partner involvement in international and national SDI arena. Specific actions under this activity are:

- consortia partner and international stakeholder networks should be maintained and informed about consortia partners activities via project communication tools,
- promotion of consortia partner SDI activities and achieved results should be spread via project communication tools widely,
- on the national level project partners should maintain established national stakeholder networks and keep them informed about their SDI activities (for example: delivering Annual national SDI reports or (co-)organizing annual SDI events).
- consortia partners should work on their involvement in international SDI arena (like participation in international SDI event or joining associations (like Copernicus Academy)).



3 Partner roles in execution of Sustainability plan

Following the sustainability activities described in Chapter 2, in Tables 1-5 partner roles for each activity are defined.

Table 1: Partner roles in activities under sub-chapter 2.1

No	Actions	Description	Responsible partner	Timeframe
1.1.1	Execution of SDI modules/courses/part of the courses which	Reporting on executed SDI courses in partners study programmes	Partner country partners	At the end of each semester
1.1.2	have been tested during the third year of BESTSDI project lifetime	Conducting student evaluation of executed SDI courses in partners study programmes	Partner country partners	At the end of each semester
1.2	Further development of BESTSDI project SDI curriculum	Updating themes of BESTSDI project SDI curriculum in SDI curriculum data base	All partners	Updating and uploading 2 themes in 5 years period
1.3	Further implementation of BESTSDI project SDI curriculum in courses in the consortia partners study programmes	Implementing new SDI study programmes, modules or courses on partners university/faculty	Partner country partners	Implementing at least 1 new study programme, module or course in 5 years period

Table 2: Partner roles in activities under sub-chapter 2.2

No	Actions	Description	Responsible partner	Timeframe
2.1	Exchange of information about the project calls and project interest among the consortia partners	Informing consortia partners about project opportunities, interest and calls	All partners	Permanently when information available about some call. Delivering annual overview at the consortia gathering
2.2	Joint participation of consortia partners in project calls	Submitting application on competitive project call which includes at least quarter of the consortia partners	All partners	Submitting at least one application annually
2.3.1	Consortia partners joint execution of GEOBIZ project	Execution of project accepted on Erasmus+ CBHE call including 2/3 consortia partners	11 partners	2020 – 2022



2.3.2	Consortia partners joint execution of projects	Execution of project accepted on competitive call which includes at least quarter of the consortia partners	All partners	Getting awarded at least one project biannually
2.4	Providing training for building capacities for execution of competitive projects.	Organising and executing training in project application/management skills	Volunteering partners (defined one year in advance)	Organising at least 1 training annually (on annual consortia partners gathering or another event)

Table 3: Partner roles in activities under sub-chapter 2.3

No.	Action	Description	Responsible partner	Timeframe
3.1	Exchange of information about the research activities among the consortia partners	Informing consortia partners about research activities	All partners	Delivering annual overview at the consortia partners gathering
3.2	Joint execution of research activities/projects	Conducting research activities (joint projects, PhD research and mentorship, study visits, etc.	All partners	Executing 3 research activities annually
3.3	Exchange of teachers and students in the field of education	Conducting educational activities (exchange of teachers and students, joint studies, study visits, etc.)	All partners	Executing 3 educational activities annually
3.4	Providing training in SDI and related knowledge areas	Organising and executing training in project in SDI and related knowledge areas	All partners	Organising at least 1 training annually (on annual consortia partners gathering or another event)

Table 4: Partner roles in activities under sub-chapter 2.4

No.	Action	Description	Responsible partner	Timeframe
4.1.1	Maintenance of the BESTSDI project web-page www.bestsdi.eu - the web-page should be continuously	Technical maintenance of the BESTSDI project web-page www.bestsdi.eu	UNIZG FOG	Continuously
4.1.2	updated and inform about the activities of the consortia,	Content maintenance of the BESTSDI project web-page www.bestsdi.eu	Selected partner (on annual basis) managing it All partners	Delivering at least one contribution quarterly



			contributing	
4.2.1	Maintenance of the BESTSDI project Moodle platform – the Moodle platform should remain open to consortia partners for reporting and updating project curriculum,	Technical maintenance of the BESTSDI project Moodle platform	UNIZG FOG	Continuously
4.2.2		Technical maintenance of the BESTSDI project developed SDI curriculum data base	UNIZG FOG	Continuously
4.3	Maintenance of the BESTSDI project developed SDI curriculum data base – in addition to Moodle platform, curriculum data base should remain active and should be updated by consortia partners with new curriculum content	Content maintenance of the BESTSDI project developed SDI curriculum data base	All consortia partners	Continuously Delivering annually report on performed SDI education
4.4	Organising annual consortia partner gathering/event for exchange of information, presentation of development and training of teacher	Organisation of annual consortia partner event	Predefined consortia partner	Annually
4.5	Supporting BESTSDI project developed SDI curriculum at faculties/universities outside the consortia circle – promoting project SDI curriculum in professional and academic society	Delivering promotion of project SDI curriculum in professional and academic society	Partner countries partners	Each partner should publish/present one paper/presentation about project SDI curriculum implementation bi-annually

Table 5: Partner roles in activities under sub-chapter 2.5

No.	Action	Description	Responsible partner	Quantity and timeframe
5.1	Consortia partner and international stakeholder networks should be maintained and informed about consortia partners	Maintenance of consortia partner and international stakeholder network – regular partner informing about consortia activities via project web-page and/or e-	One of the partner country partners (national coordinator)	Delivering one contribution every half year



	activities via project communication tools	newsletter		
5.2	Promotion of consortia partner SDI activities and achieved results should be spread via project communication tools widely	Conducting promotion activity via project communication tools, e-newsletter, leaflet or other tools of promotion	Selected partner (on annual basis) managing it All partners contributing	Delivering one contribution every half year
5.3	On the national level project partners should maintain established national stakeholder networks and keep them informed about their SDI activities (for example: delivering Annual national SDI reports or (co-)organizing annual SDI events)	Delivering Annual national SDI report	One of the partner country partners (national coordinator)	Annually
5.4	Consortia partners should work on their involvement in international SDI arena (like participation in international SDI event or joining associations (like Copernicus Academy))	Joining international SDI or related associations	Partner countries partners	Becoming member of at least one international association in three years period